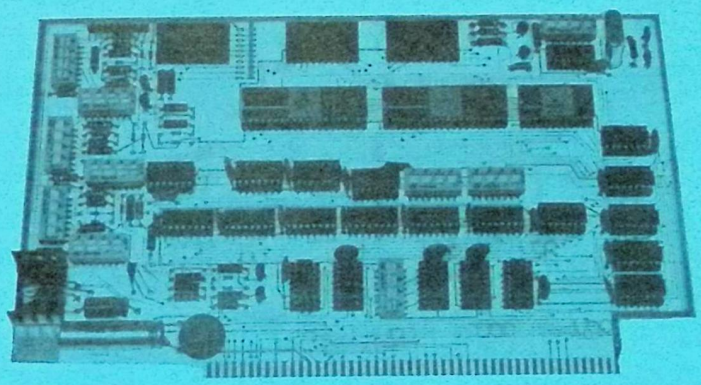
Altair 680b Universal I/O Card

Technical Information

Expand Your Altair 680b System!

The 680b Universal I/O card greatly enhances the input/output capabilities of the 680b computer by providing (optionally) one serial port and two parallel ports for communication with various terminal devices. Whether you use just one port, two ports or all three at once, each is configured individually and drives an I/O device independently of the other ports. Interface lines are switch selectable for RS-232, TTL and TTY operation.



Parallel Ports

Use the Universal I/O's parallel ports to interface the Altair 680b computer to such devices as a high speed reader and a high speed printer.

Serial Port

Use the Universal I/O's serial port to transmit and receive RS-232 and TTY data through such devices as a CRT, Teletype or Modem. An on-board, crystal-controlled 2.4576 MHz clock allows switch selection of any of the following baud rates: 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 9400 or 9600.

Port Design

The parallel port's design is based upon a Peripheral Interface Adaptor (PIA) which contains all of the Control and Data Registers, thus making most options, such as data direction and interrupt/control structure, software selectable.

The design of the serial port is based upon an Asynchronous Communications Interface Adapter (ACIA) which contains both Control and Status Registers.

Hardware

The serial port plugs into an on-board 10-pin connector with a 12 conductor round cable. Each parallel port plugs into an on-board 24-pin connector with a flat cable. The UI/O occupies one slot on the 680b Expander Card. Power requirements are as follows:

For TTY: + 16v and − 16v max., approx. 63 mA
min., approx. 45 mA

For RS-232: + 16v approx. 36 mA
− 16v 0 mA

Fully expanded: + 5v at approx. 350 mA

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Capabilities

Each PIA contains two sections. Sections A and B each contain two channels: a Control/Status Channel and a Data/Data Direction Channel. Address lines AØ and A1 enable the selection of each Section (A or B) and the Control/Status Channel or the Data Channel of that Section.

The Universal I/O with only one PIA parallel port can handle two inputs (such as a paper tape reader and keyboard) or two output devices (such as a paper tape punch and printer) or any combination of custom applications. A Universal I/O with two PIA parallel ports has 32 data lines (each group of eight is individually selectable). All data lines are fully TTL compatible. Eight of the 16 lines (per PIA parallel port) are capable of directly driving the base of a transistor switch (1.5v at 1 ma).

The ACIA contains both Control and Status Registers. The five control lines allow maximum utilization of sophisticated terminals. These control lines are: transmit data, receive data, data carrier detect, clear to send and request to send. The 8-bit Status Register allows for greater control and handshaking ability by indicating received data available, transmitter buffer empty, carrier detect, clear to send, framing error, received data overflow, parity error, and interrupt request.

All of the input/output lines to or from the ACIA are switch-selectable for RS-232, TTL levels or 20 milliamp current loop (TTY). An on-board, crystal-controlled clock allows user selection for any of 13 baud rates by positioning a dip switch. The Selectable Baud rates are:

50	200	1800
75	300	2400
110	600	4800
134.5	1200	9600
150		

The serial port is software programmable for nine or ten bit transmission as follows:

a. 7 data bits + parity bit (odd, even, or none) + 1 or 2 stop bits;
b. 8 data bits + 1 or 2 stop bits;
c. 8 data bits + 1 stop bit + parity bit (odd or even).

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